DOCUMENT RESUME

ED 201 203 FL 012 288

AUTHOR Birsh, Judith R.
TITLE The Relationship of Specific Grammatical and Propositional Aspects of Language Development at 30 Months to Reading at Age 8: A Follow-up Study.
PUB DATE Oct 80
NOTE 24p.; Paper presented at the Annual Boston University Conference on Language Development (5th, Boston, MA, October 10-12, 1980).

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Child Language; Correlation; Followup Studies; *Language Acquisition; Language Research; Males; Psycholinguistics; Reading Research; *Reading Skills; Speech Skills; Young Children

ABSTRACT

Thirty-one eight-year-old boys were the subjects of a study to determine the relationship between language skills in infancy and reading skills at elementary school age. As infants, the boys had been taped in interaction sessions with their mothers. The level of skill development of the infants was measured according to the principles of propositional construct and syntactic complexity proposed by Allen (1973). The eight-year-olds were administered the Woodcock Reading Mastery Tests and the Gray Oral Reading Test. Subjects with Syntactic Complexity Scores and Percentage of Predicative Utterances at 30 months of age more than one standard deviation below the mean for the group were the poorest readers at age 8. The children whose spontaneous utterances at 30 months contained a larger number of different syntactic functions expressed by varying kinds of grammatical constructions, and who used a greater percentage of predicative utterances, were the better readers five years later. (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED201203

The Relationship of Specific Grammatical and Propositional Aspects of Language Development at 30 Months to Reading at Age 8: A Follow-up Study

Judith R. Birsh

Fifth Annual Conference
On Language Development
Boston University, October
10 - 12, 1980

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Judith R. Birsh

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FL 012 248

There is a paucity of longitudinal research which looks at early aspects of language acquisition in relation to later reading ability in the same children, although the two language functions are inextricably intertwined. In a review of studies concerned with language delay and language difference in the speech of preschool children (Leonard, 1980), the kinds of linguistic difficulties children encountered occurred within specific features of phonology, semantics, syntax and pragmatics. There is substantial evidence that language-disabled children may use the same features as normal children, but later or less frequently and that the relationship among linguistic features may be different in normal and language-disabled children. What effect this has on later literacy skills has not been clarified. Studies begun at kindergarten age (Jansky & de Hirsch, 1972) and those that have examined the co-occurrence of particular language abilities and reading skills on standard measures (Chomsky, 1972; Loban, 1976; Ruddell, 1965) in both normal and language-disordered children (Wiig & Semel, 1976), generally report that children's control over language dominates their reading behavior. Studies of older children exhibiting difficulties with reading attest the persistance of language problems in children known to have had trouble acquiring spoken language (Wilson, Allen, & Wilson, in preparation).

However, there is surprisingly little research linking specific linguistic features of developing language to the mastery of reading components during the elementary years. The question that this study

addressed was, how early can we look for linguistic precursors to difficulties in learning to read?

This study examined the acquisition of syntax and the development of communicative content of the spontaneous oral language at 30 months of age of a group of normal boys in relation to their achievement in literacy skills at age 8 (Birsh, 1980). It was anticipated that subjects who had had difficulty in acquiring spoken language would have difficulty learning to read.

Subjects

The subjects were 31 boys, all from white families, whose mean age was 8 years with a range of 7 years, 3 months to 8 years, 9 months. The 31 boys were drawn from a group of 60 normal boys who, five years earlier, at age 24 to 30 months, had participated in a longitudinal study on social class and intellectual development at Albert Einstein College of Medicine (Golden, Birns, & Bridger, 1973; Moss, Montare, & Golden, 1973; Golden, Bridger, & Montare, 1974). Since the time of the original study many of the families had moved. After a 6 month search, 35 of the original 60 families were located. All but 4 agreed to participate in the follow-up testing at Teachers College Reading Center and Albert Einstein College of Medicine Research Playroom. There were 26 finishing 2nd grade or beginning 3rd, 4 were finishing first or beginning 2nd and one was repeating 2nd grade. Each boy attended a <u>different</u> public, private or parochial school in New York or the surrounding suburbs of Suffolk, Westchester, Rockland and Bergen counties.

As originally recruited, 16 boys had college-educated mothers, and 15 had high school educated mothers.

Language data for the original study was collected in a video-taped mother-child interaction session in which a book was introduced. The mother was instructed to "go through the book just as she would at home." It was a semi-structured task for which the participants were told what to do but not how to do it. During the 10-minute duration, there was enough time for the pair to read the book at least once and for the investigators to observe the dyadic interaction when not reading.

The linguistic analysis of the spontaneous language output and the non-linguistic context of the verbalizations of the boys and their mothers were done by Allen (1977) based on her model of communicative language development (Allen, 1973). The three major components in this model are (1) cognitive content, (2) propositional content, (3) syntactic function and form construction. For the purposes of the present study, only the propositional content and syntactic analysis were used.

Propositional Constructs

Propositional constructs are the basis of the paradigm which Allen uses to describe the communicative content of child language. The three basic classes of propositions most used by young children acquiring language are: (1) ostensive--naming (e.g., This is a train); (2) idiotropic--expressing want (e.g., I want a drink); and (3) predicative--referring to something and then saying something about it (e.g., Dolly rides in the car). In several developmental studies, Allen has found that the development of ostensive and idiotropic construct types

precede the development of full predicative utterances.

The predicative propositions were the construct type important to this study. Predicative utterances are the most common and the most potent of sentence types for complexity. They are best described as "propositions for making reports, comments, and observations about states and events or relationships between people and the activities they are engaged in." Allen maintains that predicative utterances are "superordinate to a number of sub-categories such as the actor-action goal and action-locative, and agent-state semantic classifications which are much discussed in the child language literature" (D. Allen, 1977, p. 2).

In this sample predicative utterances showed a greater range of major syntactic categories than either ostensive (naming) or idiotropic (requesting) propositional constructs. The percentage of predicative utterances relative to the total number of spontaneous utterances emerged as an important variable in measuring early child language.

Syntactic Complexity Score

The Syntactic Complexity Score, the second language paradigm developed by Allen (1973) and used in this study, is an analysis of the syntactic complexity of the child's communicative utterances. The purpose is to measure how the child expresses his thoughts in spontaneous sequential speech. The syntactic measure uses sector analysis, a tagmemic grammatical analysis developed by Robert L. Allen (1966, 1972), as the linguistic framework to analyze the syntactic function-form relationships. According to this analysis, position signals syntactic function.

Briefly, the Syntactic Complexity Score is comprised by computing the number of different syntactic functions expressed plus the number of different constructions (i.e., syntactic forms), plus the number of different embedded constructions and coordinated structures in each separate language sample analyzed. This scoring system assumes that any time the child uses a word or grammatical construction, spontaneously, he has acquired it as part of his language repertoire. In sum, the Syntactic Complexity Score and the Percentage of Predicative Utterances of the 30 month old boy's spontaneous language were used as indices of overall language growth. MLU's were also computed for purposes of comparison.

Method

In the present study, the 8 year old subjects were individually administered the Woodcock Reading Mastery Tests, Form A (Woodcock, 1973) and the Gray Oral Reading Test (Gray, 1967). Each testing session was video-taped and audio-taped. Data was collected on spelling and story writing as well as a spontaneous language sample obtained at age 8. None of the latter data were used in this study. Relationships between the 30 month data and the reading measures were explored by means of correlational analysis.

In addition to the 30 month language measures, the original study provided mothers' WAIS vocabulary raw scores and information on mothers' educational level. One-half were college educated, 30 were high school educated.

Results

Table 1 shows the results of the correlations between the language measures at 30 months and the reading tests at age 8.

Insert Table 1 about here

Subjects with Syntactic Complexity Scores and Percentage of Predicative Utterances at 30 months of age more than one standard deviation below the mean for the group were the poorest readers at age 8. The children whose spontaneous utterances at 30 months contained a larger number of different syntactic functions expressed by varying kinds of grammatical constructions and used a greater percentage of predicative utterances were the better readers five years later.

Correlation coefficients of the Syntactic Complexity Score and the Percentage of Predicative Utterances with the reading subtests showed that these specific aspects of early language acquisition were signficantly related to: (1) sight word recognition; (2) analogous reasoning; (3) providing the correct word in a cloze passage on the Woodcock Reading Mastery Tests and to reading aloud of graded paragraphs on the Gray Oral Reading Test. All of these are tests of reading fluency beyond the mechanical decoding stage. None of the early language factors was significantly related to letter naming or work attack skills which are subtests of basic decoding skills on the Woodcock.

MLU at 30 Months and Reading at 8

Mean length of utterance at 30 months showed non-significant correlations with reading at age 8. In the analysis of 30 month language data MLU served to distinguish the differences in language maturity of the subjects. I am suggesting here that MLU showed no relationship to later reading because it counts all words in a sample on an equal basis. The Syntactic Complexity Score and Percentage of Predicative Utterances, on the other hand, were sensitive to specific instances of linguistic complexity and communicative use. It was the formal, structured aspects of early language observed during a critical period of development that manifested a relationship of singular importance to later reading achievement. A syntactic analysis of the "best sentences" and an analysis of the construct types in Table 2 illustrate examples of linguistic complexity and communicative use which were related to later levels of reading achievement.

Insert Table 2 about here

Intelligence at 30 Months and Reading at 8

Table 3 shows the correlations between IQ and reading.

Insert Table 3 about here

Intelligence, as measured by the Stanford-Binet at 30 months, was positively correlated with the reading fluency measures and not decoding. The Stanford-Binet scores were also significantly correlated with both language measures. This was not unexpected due to the chiefly verbal nature of the IQ test. The IQ and language measures may represent overlapping factors of cognitive and linguistic functioning. It is important to point out the difficulty of separating intelligence from language functioning at any age.

In sum, the early verbal data of the boys were strongly related to highly integrated language tasks at age 8 and had no significant relationship with the decoding tasks which are mainly perceptual/memory skills.

Mothers' Data and Children's Reading at Age 8

The strongest correlations between the original data and the follow-up data occurred in the relationships between mothers' information and all the reading subtests. As seen in Table 3, both variables, Mothers' Educational Level and Mothers' WAIS Vocabulary raw scores, correlated significantly with all children's reading measures. Moreover, these two variables plus the early language measures, IQ and the later achievement levels on the individual reading tests, all maintained the original dichotomous characteristic of the group.

The evidence of a strong relationship between mothers' verbal facility and the boys' overall reading proficiency confirmed findings of earlier studies of these children by Allen (1977) and Golden and Birns (1976). At 30 months, the children of the college educated

mothers used more syntactically complex utterances and a higher percentage of predicative propositions to comment on relationships and events in the environment as opposed to a preponderance of expressions of needs and wants by the children of the high school-educated mothers. At age 8 reading scores were significantly different, divided according to mothers' educational level. A comparison of the means and standard deviations at both age levels in Table 4 reveals that except for MLU, all of the children with college educated mothers had higher scores than the children with high school educated mothers.

Insert Table 4 about here

Differences in Performance on Reading Tests

An examination was made of the reading performance to see what factors differentiated the two groups. Was it level of skills or perhaps different strategies being employed in the reading process? Subjects with college educated mothers (E2) seemed to have used different strategies than the subjects of high school educated mothers (E1). The E2 boys seemed to respond most directly to the phoneme/grapheme correspondences of the written language; whereas, the E1 boys were able to process larger syntactic and semantic units at the same time as they were utilizing the phoneme/grapheme cues. The oral reading tapes revealed an excessive amount of word-by-word reading in E2. Although E2 performed less well on the decoding tests, they depended on translating letters and words into their oral equivalents as their sole

strategy for reading all materials presented. Unfortunately for such readers, a simple one-to-one relationship does not exist between the words on the page and their meaning. The best readers appeared to use their knowledge of language and perhaps their famliarity with printed texts in a way that had communicative consequences.

Given the above data, assessing language at 30 months was not too early to find precursors to later language functioning. What this exploratory study has pointed up is the importance of assessing levels of syntactic complexity and communicative use of early language as precursors to later verbal learning. As many teachers recognize, one of the critical variables in successful reading instruction is the children's acquired verbal language.

Summary

To conclude, the children with high Syntactic Complexity Scores and a larger Percentage of Predicative Utterances at 30 months were the good readers in the group. Bloom and Lahey (1978) suggest that understanding the meaning of words and the grammatical relations which hold between them are correlates of the higher level processes in reading. The decoding skills are less involved with implicit language than are the tasks of comprehension of words in connected discourse. The children who early on used language in a complex way had already begun to build the means for analyzing language and constructing meanings from language which are skills necessary to read with understanding. Significant correlations between Percentage of Predicative Utterances and Syntactic

Complexity at 30 months and later reading fluency measures have indicated that children with mature language competencies at 30 months may have already attained important language functions on which reading depends. The children with less mature developmental language characteristics were, perhaps, less prepared to acquire literacy skills in first and second grade. Further longitudinal research needs to be done to observe and record the language acquisition process and the early steps of learning to read in the same children.

Judith R. Birsh, Ed.D.

Paper Presented At The Fifth
Annual Boston University Conference Of Language Development
October 10-12, 1980
Boston University
Boston, Mass.

Table 1

Correlations Between Early Language Measures and Reading Scores at Age 8: Woodcock Reading Mastery Tests and Gray Oral

(N = 31)

Language Variables at 30 Months	Letter Identification	Word Identification	Word Attack	Word Comprehension	Passage Comprehension	Gray Oral
Syntactic Complexity Score	.29	.31*	.22	.43**	.44**	.33*
Percentage of Predicative Utterances	.04	.31*	.16	.37*	.42**	.47**
Mean Length of Utterance	.16	.22	.17	.28	.29	.11

*$p < .05$.

**$p < .01$.

Table 2

Sector Spectrum with "Best Sentences" at 30 Months[a]

Propositional Construct Types	Topic	L	P	Q	$\widetilde{V}$	S			X	M	V	$\widetilde{IC/C}$	$\widetilde{B}$	O		D	IO	C	P	E	Voc	I
Group E1																						
P				What	's	he			Δ		gonna do								now			
P						I			'll		show	you		what this is								
P						They					got			some cookies				in there				
I						I			don't		want			to read it over again								
P				What	's	this			Δ		called											
P		And				the choo-choo			Δ		said			get out of my way								
P				Why	is	the car			Δ		going								over there			
P						The choo-choo train			Δ		knocked			the bunnies	down							
P						He			is		watching			trains go on track								
I						I			Δ		want			to see in the window								
P						It			Δ		says			Go and stop								
P						Somebody			Δ		ripped			it					more			
P						They			are		saying			it's gonna crash								
Group E2																						
P						I			'm		gonna go								in the boat			
I						I			Δ		want			go in Daddy's car								
I											Let	me		read it								
I						I			Δ		want			see the choo-choo train								
I											let	me		see train								
I						I			Δ		want			that horse								
I						I			don't		want			to read this story								
P						Choo-choo train					going			Choo-choo								
I						I			Δ		said			I don't want to read the book							Mommy	

[a]Sector spectrum adapted from D. A. Allen, The development of predication in child language, unpublished doctoral dissertation, Teachers College, Columbia University, 1973.

Key: P = Predicative Utterance
I = Idiotropic Utterance
Δ = Element Expressed Elsewhere

Table 3

Correlations of 30 Month Stanford-Binet Scores and Mothers' WAIS Vocabulary Raw Scores and Mothers' Educational Level With Reading at Age 8 and the Variances

(N = 31)

Variables at 30 Months	Letter Identification	Word Identification	Word Attack	Word Comprehension	Passage Comprehension	Gray Oral
Stanford-Binet	.02	.19	.02	.44*	.37*	.39*
r^2[a]				.19	.14	.15
Mothers' WAIS Vocabulary Raw Scores	.39*	.36*	.26	.47**	.48**	.38*
r^2	.15	.13		.22	.23	.15
Mothers' Educational Level	.40*	.46**	.31*	.64**	.60**	.61**
r^2	.16	.21	.10	.42	.42	.37

*$p < .05$.

**$p < .005$.

[a]r^2 is amount of variance.

Table 4

Means and Standard Deviations of 30 Month Language Scores, Stanford-Binet, Mothers' WAIS-V Raw Scores, Woodcock Reading Mastery Tests, and Gray Oral with t-Values for Differences Between Means of E1 and E2 Groups[a]

(N = 31)

Variables	Group (N=31)		Education Level 1 (N=16)		Education Level 2 (N=15)		t-test
	Means	sd	Means	sd	Means	sd	
Age 30 Months							
Syntactic Complexity Score	9.13	4.86	11.31	4.05	6.64	4.62	3.0**
Percentage of Predicative Utterances	38.79	29.57	52.64	28.11	22.98	23.09	3.2**
Mean Length of Utterance	2.84	.75	3.03	.65	2.62	.83	1.52
Mothers' WAIS-V	57.94	17.00	69.69	6.03	45.40	15.95	5.68**
Stanford-Binet 30 Months	116.52	20.19	129.88	16.32	102.27	12.90	5.21**

Table 4--Continued

Variables	Group (N=31)		Education Level 1 (N=16)		Education Level 2 (N=15)		t-test
	Means	sd	Means	sd	Means	sd	
Age 8							
Letter Identification	142.65	13.60	147.88	12.91	137.07	12.33	2.38*
Word Identification	162.39	27.31	174.38	19.40	149.60	29.24	2.76*
Word Attack	108.07	19.41	113.88	15.64	101.87	21.57	1.78*
Word Comprehension	75.16	14.90	84.31	7.89	65.40	14.50	4.5**
Passage Comprehension	90.48	14.59	98.88	10.78	81.53	12.86	4.08**
Gray Oral	26.68	12.27	33.75	11.09	19.13	8.51	4.09**

[a]Groups E1 and E2, college educated mothers, high school educated mothers, respectively.

*$p < .05$.

**$p < .005$.

References

Allen, D. A. The development of predication in child language. Unpublished doctoral dissertation, Teahcers College, Columbia University, 1973.

Allen, D. A. The development of propositional speech in young children. Paper presented at the Society for Research in Child Development, New Orleans, March 1977.

Allen, R. L. English grammars and English grammar. New York: Charles Scribner's Sons, 1972.

Allen, R. L. The verb system of present-day American English. The Hague: Mouton, 1966.

Birsh, J. R. The relationship of specific grammatical and propositional aspects of language development at 30 months to reading ability at age 8: A follow-up study. Unpublished doctoral dissertation, Teachers College, Columbia University, 1980.

Bloom, L., & Lahey, M. Language development and language disorders. New York: Wiley, 1978.

Chomsky, C. Stages in language development and reading exposure. Harvard Educational Review, 1972, 42(1), 1-33.

Golden, M., Birns, B., & Bridger, W. Review and overview: Social class and cognitive development. Paper presented at the Society for Research in Child Development, Philadelphia, April 1973.

Golden, M., Bridger, W., & Montare, A. Social class differences in the ability of young children to use verbal information to facilitate learning. American Journal of Orthopsychiatry, 1974, 44(1), 86-91.

Gray, W. S. Gray Oral Reading Test. H. Robinson (Ed.). Indianapolis: Bobbs-Merrill, 1967.

Jansky, J. J., & de Hirsch, K. Preventing reading failure. New York: Harper and Row, 1972.

Leonard, L. B. The speech of language-disabled children. Bulletin of the Orton Society, 1980, 30, 141-152.

Loban, W. Language development: Kindergarten through grade twelve. Urbana, Illinois: National Council of Teachers of English Research Report No. 18, 1976.

Moss, A., Montare, A., & Golden, M. Verbal comprehension and production. Paper presented at the Society for Research in Child Development, Philadelphia, April 1973.

Ruddell, R. Effect of the similarity of oral and written patterns of language structure on reading comprehension. Elementary English, 1965, 42, 403-410.

Wiig, E. H., & Semel, E. M. Language disabilities in children and adolescents. Columbus, Ohio: Charles E. Merrill, 1976.

Wilson, B. C., Allen, D. A., & Wilson, J. Longitudinal study of preschool children with language disorders. North Shore University Hospital - Cornell University Medical College, New York. (Data in preparation).

Woodcock, R. W. Woodcock Reading Mastery Tests, Form A. Circle Pines, Minnesota: American Guidance Service, 1973.